WHAT IS CLAIMED IS:

1. A cross shaft comprising:

trunnion;

rolling bearings externally provided at the trunnion in a plurality of rows in an axial direction of the trunnion; and

a recess formed at a distal end face of the trunnion, wherein a bottom region of the recess is formed in a spherical shape, an inner diameter of an opening region of the recess except the bottom region is set to be gradually larger toward an opening end edge of the recess, a depth of the recess from the from the opening end edge to a deepest point of the bottom region is set to be 30 to 70% of a total length of the roller bearings in the axial direction.

2. The cross shaft according to claim 1, wherein the trunnion is provided on an outer peripheral face thereof with a plurality of bearing rolling faces which are successively reduced in diameter from a root thereof toward a distal end thereof.

3. The cross shaft according to claim 1, wherein an inner diameter of the opening end edge of the recess is set to be 50 to 80% of an outer diameter of the distal end of the trunnion, and the bottom region in the spherical shape has a central angle which is set to be 120 to 160 degree, and radius of curvature which is set to be 50% or less of the inner diameter of the

opening end edge of the recess.

4. The cross shaft according to claim 1, wherein the cross shaft is made of carburized steel and roller vanishing process is applied to the bearing rolling face.

5. The cross shaft according to claim 1, wherein the cross shaft joint includes four of the trunnions and four roller bearings are respectively mounted on the four trunnions.

6. The cross shaft according to claim 5, wherein crownings in a curved shape are formed at both ends of each of the rollers on an outer peripheral face thereof.